

December 31, 2014

U.S. Department of Transportation  
Docket Management System  
1200 New Jersey Ave., SE  
Washington, DC 20590

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**Exemption Request for Aerial Video and Imagery, LLC. Under Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA)**

Dear Sir or Madam:

Aerial Video and Imagery, LLC. (AVI) requests exemptions from several provisions of the Federal Aviation Regulations (FAR) in accordance with Section 333 of the FAA Modernization and Reform Act of 2012. AVI seeks these exemptions in order to safely operate small lightweight DJI unmanned aircraft systems (UASs) (detailed below) commercially (private property mapping and surveys) in airspace regulated by the Federal Aviation Administration (FAA). The exemptions AVI is requesting are Part 21; §§ 45.23(b); 61.113(a) and (b); 61.133(a); 91.7(a); 91.9(b)(2); 91.109(a); 91.119; 91.151(a); 91.203(a) and (b); 91.319(a)(1); 91.405(a); 91.407(a)(1); 91.409(a)(2); and 91.417(a) of Title 14, Code of Federal Regulations (14 CFR part 11). The exemption would allow operation of unmanned aircraft systems (UAS) for the purpose of precision aerial surveys.

The requested exemption would support an application for a commercial Certificate of Authorization to use the system to support private property mapping and surveys:

- Marketing/Advertising
- Land Development
- Insurance Claims
- Forestry / Agriculture
- Golf Course Planning
- Construction
- Real Estate
- Inspections
- Land Appraisal
- Wildlife Management
- Resort/Recreation
- Vineyard and Winery

The DJI UASs systems consist of lightweight battery operated aircrafts, an integrated state of the art ground station system and communications equipment. The aircrafts carry an onboard high resolution camera (with first person view) that allows us to conduct precision aerial photography and video. This technology will assist the PICs in providing the upmost safety procedures and the public will benefit from these services. AVI services will help the commercial industry and not bring harm to any person in the air or on the ground.

The aircrafts of AVI will be operated in the field of view with both a Pilot in Command (PIC) and a ground-based Visual Observer (VO) in accordance with FAA Policy N 8900.227 Section 14 "Operational Requirements for UAS" with the following additional restrictions:

- All operations will occur in Class G airspace (below 400' AGL)
- Operations will be operated over private property, commercial property, or property (not federal or state) with permission of the land owner
- The aircraft will not operate within 5 NM of any airport or heliport (unless well-coordinated with the FAA and airport/heliport (detailed flight plans))
- Operations will be limited to day, visual meteorological conditions
- Aircraft will remain within Visual Line of Sight at no greater than ½ NM of the PIC at all times
- While the aircraft is airborne, the VO will be positioned within voice distance to PIC

The PIC and VO will meet the requirements outlined in FAA Policy N 8900.227 Section 16 Personnel Qualifications. Additionally, the PIC and VO will perform maintenance on the system and will complete all necessary maintenance set forth by the FAA or manufacturer.

We submit that the combination of the aircrafts light weight, historically demonstrated flight performance, fully qualified flight crew and strict operation under the guidelines established in 8900.227, the FAA can have confidence that the operation will have an equivalent or greater level of safety of manned aircraft performing similar operations. AVI is dedicated to safety and believes the company will not bring any harm to the public (air or ground).

Unmanned Aircraft Systems (UASs): *User Manuals are attached*

AVI proposes to operate the DJI UASs Phantom 2, Phantom 2+, and the S900. The petitioner states that given the size, weight, speed, and limited operating area associated with the aircraft to be utilized by the applicant, an exemption from 14 CFR part 21, Subpart H (Airworthiness Certificates), subject to certain conditions and limitations, is warranted and meets the requirements for an equivalent level of safety under 14 CFR part 11 and Section 333 of P.L. 112-95 (Section 333). The petitioner further states that UAS operated without an airworthiness certificate in the limited environment and under the conditions and limitations proposed by the petitioner will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate issued under 14 CFR part 21, Subpart H and not subject to the proposed conditions and limitations.

The petitioner states that the unmanned aircraft (UA) to be operated under this request is a rotary-wing aircraft, with the smallest aircraft weighing 2.5 lbs (largest weighing 7.6 lbs) fully loaded, flies at a

maximum speed of 29 knots (not recommended), carries neither a pilot nor passenger, carries no flammable fuels, and operates exclusively within a pre-disclosed area. Operations under this exemption will be tightly controlled and monitored by both the operator, spotter, and local public safety requirements.

DJI Aircraft Specs: ***Aerial Video and Imagery has a total of 4 aircraft listed in this exemption***

**Phantom 2 (1): Serial Number: PH645195943**

Weight: 2.5 pounds

Max Speed: 29 knots

Fight Time: 25 mins

Battery: 3S LiPo, 5200mAh, 11.1V

Operating Frequency: 2.4GHz ISM (range 1000 meters) *Note: We only operate with 100% line of sight to the Aircraft (we do not lose visual of the aircraft)*

First Person View: Yes

**Phantom 2 Vision + (2): Serial Number: PH645199878 Serial Number: PH645240161**

Weight: 2.7 pounds

Max Speed: 29 knots

Fight Time: 25 mins

Battery: 3S LiPo, 5200mAh, 11.1V

Operating Frequency: 5.728 GHz—5.85 GHz

First Person View: Yes

**S900 (1): Serial Number: 0370010491**

Weight: 7.6 pounds

Max Speed: 31 knots

Fight Time: 25 mins

Battery: LiPo (6S, 10000mAh~15000mAh, 15C(Min))

Operating Frequency: 2.4GHz ISM (range 1000 meters) *Note: We only operate with 100% line of sight to the Aircraft (we do not lose visual of the aircraft)*

First Person View: Yes

### **Additional Safety Features for all the DJI UASs:**

- The Phantoms and s900 will enter Failsafe mode when its connection to the Remote control is lost. The Flight Control System will automatically control the aircraft to return home and land to prevent injury or damage. The Failsafe activates when:
  - The Remote Control is powered off in flight
  - The aircraft has flown out of range
  - The signal between the Remote Control and the Phantom has been blocked
  - There is interference causing a signal problem with the Remote Control
  - The battery is at 10% battery life
- Maximum Altitude is set at 400 feet for all DJI aircrafts
- All airports are loaded into the flight controllers and the aircraft will not fly within 5nm of any airport
- All aircraft are equipped with GPS enabled systems

### **UAS Pilot in Command (PIC)**

The petitioner asserts that operators of the DJI should not be required to hold a commercial or private pilot certification. The petitioner notes that unlike a conventional aircraft that carries a pilot, passengers, and cargo, the DJI UASs are remotely controlled with no passengers or property of others on board. The petitioner proposes that operator requirements should take into account the characteristics of the particular UAS. The petitioner states that the DJI UASs have high degree of pre-programmed control and various built-in technical capabilities that strictly limit the potential for operation outside of the operating conditions set forth in its petition for exemption.

AVI will not allow the PIC to fly any aircraft without at least 40 hours of training flight time with the exact aircraft used for the business. The company has several private testing areas that are in a remote locations with no vertical obstructions. This allows the PICs for AVI to test all the systems and understand fail safe features to the fullest extent before conducting business with the UAS.

PICs and VOs for Aerial Video and Imagery, LLC.

Jeffery Morse, CEO – 540-205-5734

Aaron Showker, Vice President – 703-774-6441

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AVI's PICs are well versed in all the safety features on the DJI aircrafts. They have spent countless hours perfecting the pre-flight, flight, and post flight procedures. AVI's PICs can perform all necessary maintenance on the DJI aircrafts and if for some reason they are not able to fix aircraft to safety specifications, then they will seek assistance from the manufacturer. Any operation under the exemption would be conducted in accordance with the strict parameters of the FAA and the DJI Flight Operational Manuals. (Attached to the request)

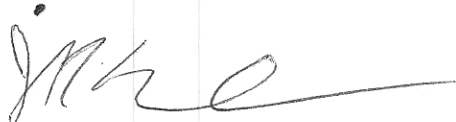


The name and contact information of the applicants are:

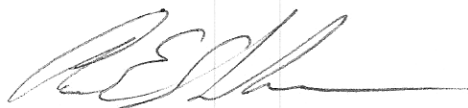
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AVI is prepared to modify or amend any part of this request to satisfy the need for an equivalent level of safety. We look forward to working with your office. Please contact us any time if you require additional information or clarification.

Sincerely,



Jeffery Morse  
CEO



Aaron Showker  
Vice President

The petitioner requests relief from the following regulations in 14 CFR Part 21:

Part 21 prescribes, in pertinent part, the procedural requirements for issuing and changing design approvals, production approvals, airworthiness certificates, and airworthiness approvals.

Section 45.23(b) prescribes, in pertinent part, that when marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

Section 61.113(a) and (b) prescribe that—

(a) no person who holds a private pilot certificate may act as a pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

(b) a private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:

(1) The flight is only incidental to that business or employment; and

(2) The aircraft does not carry passengers or property for compensation or hire.

Section 61.133(a) prescribes, in pertinent part, that a person who holds a commercial pilot certificate may act as pilot in command of an aircraft: (i) Carrying persons or property for compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation; and (ii) For compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation.

Section 91.7(a) prescribes that no person may operate a civil aircraft unless it is in an airworthy condition. Section 91.7(b) prescribes that the pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

Section 91.9(b)(2) prohibits operation of U.S.-registered civil aircraft unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Section 91.109(a) prescribes, in pertinent part, that no person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.

Section 91.119 prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

- (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
- (b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
- (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.
- (d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—
  - (1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and
  - (2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

Section 91.151(a) prescribes that no person may begin a flight in an airplane under visual flight rules (VFR) conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, (1) during the day, to fly after that for at least 30 minutes [emphasis added].

Section 91.203(a) prescribes, in pertinent part, that no person operate a civil aircraft unless it has within it (1) an appropriate and current airworthiness certificate; and (2) an effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in § 47.31(c).



Section 91.203(b) prescribes, in pertinent part, that no person may operate a civil aircraft unless the airworthiness certificate or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

Section 91.319(a) (1), Aircraft having experimental certificates: Operating limitations, prescribes in pertinent part that no person may operate an aircraft that has an experimental certificate for other than the purpose for which the certificate was issued. Section 91.405(a) requires, in pertinent part, that an aircraft operator or owner shall have that aircraft inspected as prescribed in subpart E of the same part and shall, between required inspections, except as provided in paragraph (c) of the same section, have discrepancies repaired as prescribed in part 43 of the chapter.

Section 91.407(a)(1) prohibits, in pertinent part, any person from operating an aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless it has been approved for return to service by a person authorized under § 43.7 of the same chapter.

Section 91.409(a)(2) prescribes that no person may operate any aircraft unless, within the preceding 12 calendar months, it has had an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

Section 91.417(a) prescribes, in pertinent part, that—

(a) Each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller,



rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by § 43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

§11.81 What information must I include in my petition for an exemption?  
You must include the following information in your petition for an exemption and submit it to